

A North American *Elasmus* Parasitic on *Polistes* (Hymenoptera: Eulophidae)

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ABSTRACT

Elasmus polistis Burks, new species (Hymenoptera: Eulophidae), a primary parasite of the larvae of several species of social wasps of the genus *Polistes* (Hymenoptera: Vespidae) in eastern United States, is described.

Not long after I published a revision of the North American species of *Elasmus* Westwood (Burks, 1965) I began receiving specimens of an *Elasmus* species that I had not included. It is a primary parasite of social wasps of the genus *Polistes*. This parasite proved to be not only common but also widespread in Eastern North America, although it had not been represented in the large amount of *Elasmus* material that had accumulated in the U.S. National Museum collection during the century before I published my revision. At first I thought it might be an immigrant species that had recently gained entrance to North America, but my search of the world fauna failed to produce a name for it. It turned out to be undescribed. Since a name for it is now needed by workers who wish to publish on the parasites of *Polistes*, I describe it here.

There are other species of *Elasmus* in the world fauna that have been recorded as parasitizing *Polistes*. Iwata and Tachikawa (1966) give *Elasmus japonicus* Ashmead as a parasite of *Polistes jadvigae* Dalla Torre in Japan. Ferrière (1947) gives *Polistes gallicus* (L.) as the host of *Elasmus schmitti* Ruschka

in Europe. Masi (1935) described *Elasmus invreae* from the nest of *Polistes foederatus* Kohl in Italy, but Ferrière (1947) placed *invreae* in synonymy under *schmitti*. Erdős (1964) described *Elasmus biroi* from *Polistes opinabilis* Kohl in Hungary. Ferrière (1930) described *Elasmus lamborni* from Tanganyika, from "vespid nests." It might have been a *Polistes* parasite.

All of these foreign species have the thorax predominantly yellow, with only minute dorsal dark markings. None could be the same as the undescribed North American species, which has the thorax predominantly black, with relatively small yellow markings. The Japanese species has both the thorax and gaster yellow, unlike our species, which has the gaster black. In addition, the European species have the antennal funicular segments short, semi-quadrate. The North American species has the funicular segments elongate. As described, the African *E. lamborni* would be separated from our North American *Polistes* parasite by its predominantly yellow thorax in the female. The male of *lamborni* has the face and dorsal spots on the thorax yellow; the face and the

thoracic dorsum of the male of the North American species are black.

Elasmus polistis, new species

Female. — Length, 2.5-3.0 mm. Face and ventral part of frons up to level of apices of antennal scapes, areas bordering inner eye margins on vertex, antennal scapes, sides of pronotum, spot at anterodorsal angle and at posterolateral angle of mesoscutum, prepectus (except for black anterodorsal angle), tegula, lateral margins of scutellum and postscutellum, entire foreleg, midleg (except for black line on dorsal margin of furur), and hindleg (except for black dorsal half of coxa and dorsal margin of furur), white to pale yellow. Gastral terga 1-5 red-brown laterally. All other parts of head, thorax, and abdomen black with faint metallic green luster. Wings hyaline, veins white or pale tan. Head, body, and appendages clothed with dark brown or black bristles.

Head slightly broader than high, frons with scattered, shallow umbilicate punctures, interstices smooth; vertex with deeper, more closely set umbilicate punctures, interstices minutely pebbled; mandibles symmetrical, each with 2 ventral denticles and 5 or 6 minute dorsal denticles; length of ocellular line twice as great as diameter of lateral ocellus. Relative lengths of parts of antenna: scape, 30; pedicel, 12; first funicular, 18; second, 14; third, 14; club, 35.

Bristle at posterolateral angle of pronotum as long as lateral margin of pronotum; tegula with 6 or 7 bristles; surface of prepectus smooth (not minutely striolate, as in *albizziae* Burks). Forewing with submarginal vein 1/3 as long as marginal, postmarginal 1/6 as long as marginal, stigmal 1/3 as long as postmarginal. Coxal bristles as in *albizziae*. Row of bristles along posterior margin of midtibia sinuate near base; midfemur lacking discal bristles, these present only in dorsoapical area. Hindfemur with dorsoapical bristles; hindtibia with 7 diamond-shaped areas along posterior margin. Scutellum smooth and shining, bearing 2 pairs of stout bristles; postscutellum projecting slightly past middle of propodeum.

Propodeal spiracles round, not touching anterior propodeal margin. Gaster as long as head, thorax, and propodeum combined; first gastral tergum twice as long as second, sixth tergum as long as first; fifth tergum with 1 transverse row of bristles, sixth with 3 irregular transverse rows, seventh tergum densely bristly. Apices of ovipositor sheaths barely projecting beyond apex of gaster.

Male. — Length, 1.5-2.0 mm. Entirely black, with faint metallic green luster, except antennae tan and legs mostly pale yellow, as in female. Base of tegula and a minute area at each posterolateral angle of mesoscutum may be yellow. Wings hyaline, veins tan. Antenna with long branch borne on each of 3 basal funicular segments. Relative lengths of parts of antenna: scape, 24; pedicel, 10; first

funicular, 8, length of branch, 60; second funicular, 8, branch 60; third, 10, branch, 50; fourth, 44; club, 40. Gaster as long as thorax and propodeum. Basal gastral tergum as long as 2 following terga.

This species runs to couplet 10 in my key (Burks 1965: 202), where it comes out with *albizziae* Burks. It agrees with *albizziae* in having the funicular segments elongate, more than 1-1/2 times as long as wide, in having the scutellum provided only with 4 stout bristles, the posterior margin of the hindtibia having 7 diamond-shaped figures, and in having numerous small teeth on the mandible. Both species also have the ventral half of the head yellow in the female. They differ in that the mandible of *polistis* has 2 ventral denticles and 5 or 6 dorsal denticles, rather than 1 ventral denticle and 17 to 19 dorsal denticles, as in *albizziae*; the first funicular segment in *polistis* is 1-1/2 times as long as the pedicel, rather than being the same length; the prepectus in the female of *polistis* is almost entirely yellow, rather than being black; and the mesoscutum of the female of *polistis* has 2 yellow spots on each side, instead of being entirely black or having only a variable, minute yellow spot at each anterolateral angle. The 2 species also differ genetically. Large rearings of *polistis* are approximately 80% female and 20% male, and the sexes have been observed to mate readily. The species is bisexual. *E. albizziae*, however, is known to be parthenogenetic, and males are extremely rare. When I described *albizziae* in 1965 the male was unknown, but a single male was found in 1967. By now I have seen thousands of females, but only 9 males. Almost all the reared series I have seen are exclusively female.

Type locality. — Madison Co., Georgia.

Type. — U. S. N. M. No. 71549.

Type material. — Described from 409 female, 55 male specimens. Holotype female, allotype male, and 3 female, 4 male paratypes, Madison Co., Georgia, emerged October 1970, from *Polistes annularis* (L.), T.F. Dirks; 8 female, 1 male paratypes, from near Pittsburgh, Pennsylvania, emerged October 2, 1969, from *Polistes exclamans* Viereck, R. Gauss; 397 female, 49 male paratypes, Belts-

ville, Maryland, emerged August 1970 from *Polistes fuscatus* (F.) B.H. Braun.

Biology. — This is a primary parasite of the larvae of several species of social wasps of the genus *Polistes* (Vespidae). Dr. T.F. Dirks has given me the following observations on this parasite: It “appears to be parasitic as it emerged from uncapped cells and killed the host larvae. These [parasitic] wasps were usually found in nests not occupied by pyralids, so undoubtedly were dependent upon *Polistes* larvae.”

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